

San Joaquin Valley Unified Air Pollution Control District

PERMIT UNIT: S-1120-2-5

EXPIRATION DATE: 2/28/99

EQUIPMENT DESCRIPTION:

NOMINALLY RATED 25 MW GENERAL ELECTRIC LM-2500 NATURAL GAS FIRED GAS TURBINE ENGINE COGENERATION SYSTEM WITH STEAM INJECTION, AT MAXIMUM HEAT INPUT OF 250 MMBTU/HR

Permit Unit Requirements

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. A Continuous Emissions Monitoring System shall be in place and operating whenever the facility is operating. NO_x emissions in ppmv (as NO₂ corrected to 3% O₂), and O₂ concentrations must be recorded continuously. The 3-hour average emissions rates shall be calculated using the data points required under Section 60.13(b). The records shall include a daily emission rate consisting of a 24-hour average emission rate. [District NSR Rule; 40 CFR 60.486 paragraph b, c and d] Federally Enforceable Through Title V Permit
3. Unfired heat recovery steam generator shall not be designed for supplemental firing. Unfired heat recovery steam generator turbine exhaust shall be equipped with continuously recording emissions monitors for NO_x, CO, and O₂. The continuous emission monitors shall be calibrated and operated according to U.S. EPA guidelines as specified in 40 CFR 60, Appendix F, 40 CFR 51, Appendix P, and 40 CFR, Part 60, Appendix B or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District NSR Rule; District Rule 1080; District Rule 4703; 40 CFR Part 60; Kern County Rule 108] Federally Enforceable Through Title V Permit
4. For control of all gas turbine exhaust, the gas-fired turbine shall be equipped with combustor steam injection and a selective catalytic reduction (SCR) control systems utilizing ammonia as reducing agent for NO_x controls. [District NSR Rule; District Rule 4703,5.1] Federally Enforceable Through Title V Permit
5. Gas turbine engine shall be equipped with continuously recording fuel flowmeter. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Gas turbine combustor steam injection system shall be equipped with continuously recording steam and fuel/injection monitoring system, accurate within <5% allowing calculation of water/steam to fuel injection ratio. [District NSR Rule; District Rule 4703, 6.2.1; 40 CFR 66.334(a)] Federally Enforceable Through Title V Permit
7. Audits of monitors shall be conducted semiannually in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with the quarterly compliance reports to the District. [District NSR Rule] Federally Enforceable Through Title V Permit
8. Gas turbine engine shall be fired exclusively with PUC regulated natural gas. The gas must have a sulfur content of less than or equal to 0.017%. [District Rule 4801; CFR 60.332(a); CFR 60.333(a) & (b); Kern County Rule 407] Federally Enforceable Through Title V Permit
9. Gas turbine engine steam injection rate shall be maintained at a steam to fuel ratio expected to result in compliance with all emissions limits, except during periods of startup, shutdown, and malfunction as

defined in this permit. Only malfunctions as defined in 40 CFR 60 qualify for this exemption. [40 CFR Part 60, Subpart A] Federally Enforceable Through Title V Permit

10. Ammonia injection rate shall be controlled to maintain ammonia slip to less than 20 ppmv. [District Rule 4102]

11. Gas turbine engine shall not be operated unless steam injection system, selective catalytic reduction system, and oxidation catalyst system are operating, except during periods of startup or shutdown as defined in this permit. [District NSR Rule] Federally Enforceable Through Title V Permit

12. Inlet gas temperature to catalyst bed shall be maintained within range recommended by catalyst manufacturer except during periods of startup and shutdown as defined in this permit. [District NSR Rule] Federally Enforceable Through Title V Permit

13. The operator shall keep accurate records of daily fuel consumption of gas turbine engine and shall make such records available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

14. All gas turbine engine exhaust shall flow through both catalyst beds. [District NSR Rule] Federally Enforceable Through Title V Permit

15. Gas turbine lube oil atmospheric vent shall be equipped with Hilliard oil mist eliminator, electrostatic precipitator, or other District approved smoke control device. [District NSR Rule] Federally Enforceable Through Title V Permit

16. Liquids collected from lube oil system (including atmospheric vent) shall be stored in closed containers such that VOC emissions do not occur. [District NSR Rule] Federally Enforceable Through Title V Permit

17. The facility shall comply with all applicable requirements for compliance assurance monitoring in 40 CFR Part 64. [40 CFR Part 64] Federally Enforceable Through Title V Permit

18. Emission rates from gas turbine exhaust stream shall not exceed the following: PM₁₀: 74.88 lb/day and 3.12 lb./hr (except during periods of startup and shutdown), NO_x (as NO₂): 96.96 lb/day, SO_x (as SO₂): 3.84 lb/day, and CO: 669.19 lb/day [District NSR Rule] Federally Enforceable Through Title V Permit

19. Maximum emission concentration of nitrogen oxides (as NO₂) at the gas turbine exhaust stack shall not exceed 4.5 ppmv dry calculated to 15% O₂, except during periods of startup and shutdown. [District NSR Rule] Federally Enforceable Through Title V Permit

20. Total VOC emissions, total for gas turbine exhaust and lube oil vents, shall not exceed 3.12 lb./hr and 74.84 lb./day, except during periods of startup and shutdown. [District NSR Rule] Federally Enforceable Through Title V Permit

21. Maximum emission concentration of carbon monoxide (CO) at gas turbine exhaust stack shall not exceed 51 ppmv dry calculated to 15% O₂, except during periods of startup and shutdown. [District NSR Rule] Federally Enforceable Through Title V Permit

22. Compliance with PM₁₀ (hourly) emission limit shall be demonstrated by District witnessed sample collection by independent testing laboratory within 60 days upon detection of visible emissions in excess of 5% opacity from turbine exhaust. Official test results and field data collected shall be submitted to the District within 60 days of testing. [District NSR Rule] Federally Enforceable Through Title V Permit

23. Compliance with ammonia slip (ppmv) emission limits shall be demonstrated by independent testing laboratory annually within 60 days prior to permit anniversary date. The District shall be notified prior to

completion of the audits. CEM data can be used in addition to stack testing to determine compliance with the NO_x and CO concentration and daily emission limits. Official test results and field data collected shall be submitted to the District within 60 days of testing. [District Rule 4102]

24. Any lube oil cooler/accumulating vent having visible emissions with an opacity of 5% or greater shall be tested to demonstrate compliance with VOC hourly emissions limit. Official test results/field data shall be submitted within 60 days of testing. [District NSR Rule] Federally Enforceable Through Title V Permit

25. Permittee shall demonstrate compliance with NO_x and carbon monoxide daily emissions limits by use of CEM data, fuel rate data, and daily hours of operation data. A written record of the required compliance demonstrations shall be maintained and made available for District inspection for a period of five years. [District NSR Rule] Federally Enforceable Through Title V Permit

26. Startup and shutdown of the gas turbine, as defined in this permit and in 40 CFR Subpart A 60.2, shall not exceed a time period of three hours and one hour, respectively, per occurrence. Emission concentrations subsequent to this startup period shall not exceed the limits specified in this permit except during shutdown. [40 CFR Subpart A 60.2] Federally Enforceable Through Title V Permit

27. Permittee shall maintain records of daily NO_x and CO emissions from CEM data, and such records shall be made readily available for District inspection upon request for a period of five years. [District NSR Rule] Federally Enforceable Through Title V Permit

28. Operations during periods of startup and shutdown shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of emission limit shown in this permit during periods of startup and shutdown be considered a violation of the applicable emissions limit unless otherwise specified in the applicable standard. [40 CFR 60.8(c)] Federally Enforceable Through Title V Permit

29. Circular cross section exhaust stack (after SCR unit) shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and equipped with flow straighteners, if necessary, to minimize turbulence. The facility shall comply with this and all applicable compliance testing procedures described in District Rule 1081 (amended December 17, 1992). [District NSR Rule; District Rule 1081; District Rule 4703; Kern County Rule 108; 40 CFR Part 60] Federally Enforceable Through Title V Permit

30. Source testing for VOC (hourly), NO_x concentration and CO concentration shall be conducted annually using the methods and procedures approved by the District and shall be conducted under conditions representative of normal operation. [District NSR Rule; District Rule 1081, 7.0; District Rule 4703, 5.1 & 6.3; CFR 60.332(a)&(b)] Federally Enforceable Through Title V Permit

31. The concentration of nitrogen oxides (NO_x) from the gas turbine exhaust stream shall be determined using EPA Method 7E or 20, and oxygen (O₂) concentrations shall be determined using EPA Method 3, 3A, or 20. Carbon monoxide (CO) emissions shall be determined using EPA Test Methods 10 or 10B. Source test results will be provided to the District annually. [District Rule 1081; District Rule 2520, 9.4 and 9.5; District Rule 4703, 5.1, 5.2 & 6.4; 40 CFR Subpart GG 60.335(b) & (c); 40 CFR Subpart A 60.8] Federally Enforceable Through Title V Permit

32. The facility shall comply with the applicable requirements for quality assurance testing and maintenance of the CEM equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080; 40 CFR Part 60] Federally Enforceable Through Title V Permit

33. CEM results shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080, 7.2; Kern County Rule 108] Federally Enforceable Through Title V Permit

34. Except for NO_x and CO emission data obtained for compliance demonstration purposes, CEM data shall be averaged in accordance with the requirements specified under 40 CFR Part 60.13. Compliance results for NO_x and CO shall be averaged over a three hour period. [District Rule 4703, 5.0] Federally Enforceable Through Title V Permit

35. Records shall be maintained and shall contain; the occurrence and duration of any startup, shutdown or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system was inoperative, maintenance of any CEMs that have been installed pursuant to District Rule 1080; emission measurements, and the daily actual local startup and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b); District Rule 4703; Kern County Rule 108] Federally Enforceable Through Title V Permit

36. Permittee shall report the following emissions to the District: Emission rate of NO_x and CO on a three hour average, and daily emissions of NO_x and CO. [District NSR Rule] Federally Enforceable Through Title V Permit

37. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements; SJVUAPCD Rules 1080, sections 4.0, 6.5, 7.2, 7.3, 8.0, 9.0, and 10.0 (amended December 17, 1992); 1081 (amended December 16, 1993); 4201 (amended December 17, 1992); 4801 (amended December 17, 1992); 4703 sections 5.0, 5.1, 5.2, 6.2.1, 6.2.4, 6.3, and 6.4 (amended October 16, 1997); 40 CFR 60.332(a) & (b); 40 CFR 60.333(a),(b),(c); 40 CFR 60.335(a),(b),(c),(e); and 40 CFR Part 64. A permit shield is granted for these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

38. Gas-fired turbine shall be equipped with carbon monoxide (CO) reactor of sufficient catalyst volume to meet CO and VOC emissions limits. [District NSR Rule] Federally Enforceable Through Title V Permit

39. All permits issued to facilities #S-172, S-1118, S-1119, S-1120 and S-2049 are included in Destec's heavy oil central stationary source. [District NSR Rule] Federally Enforceable Through Title V Permit

40. Operators of CEMs shall submit a written report for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventative measures adapted; averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 2520, 9.6.1; District Rule 1080, 8.0; Kern County Rule 108; CFR 60.7(c)] Federally Enforceable Through Title V Permit

41. The operator shall notify the APCO of a violation of emission standards indicated by the CEMs within 96 hours of occurrence. The APCO shall be notified within 8 hours after a detection of a breakdown in monitoring equipment and 24 hours prior to a planned shutdown of monitoring equipment. [District Rule 2520, 9.6.2; District Rule 1080, 9.0 & 10.0; Kern County Rule 108; 40 CFR 60.334(c)] Federally Enforceable Through Title V Permit

42. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081, 7.0; Kern County Rule 108.1] Federally Enforceable Through Title V Permit

43. The operator shall maintain of file copies of all natural gas fuel invoices, natural gas bills, gas purchase contracts, supplier certifications, and test results used to determine compliance with the requirements of this permit unit. Certification of the sulfur content by the gas supplier will be an

acceptable alternative for verifying compliance. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit

44. All CEM data, test results, and operating permit data required to comply with the conditions in this permit shall be rounded to the same number of significant digits as the specified limits. [40 CFR 60.14(h)] Federally Enforceable Through Title V Permit

45. Total particulate matter (PM) emissions for the gas turbine exhausts shall not exceed 0.1 gr/dscf. [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit

46. The operator shall make continuous emissions monitoring printouts available for District inspection and shall otherwise meet recordkeeping and quarterly reporting requirements of Rule 1080. [District Rule 1080] Federally Enforceable Through Title V Permit

47. Startup and shutdown of the gas turbine, as defined in this permit and in 40 CFR Subpart A 60.2 and District Rule 4703 shall not exceed a time period of two hours and one hour, respectively, per occurrence. Emission concentrations subsequent to this startup period shall not exceed 9.0 ppmv for NO_x and 200 ppmv for CO except during shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit